National Institute of Environmental Health Sciences

Prognostic factors in heat wave related deaths: A meta-analysis

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Abstract:

BACKGROUND: Although identifying individuals who are at increased risk of dying during heat waves and instituting protective measures represent an established strategy, the evidence supporting the components of this strategy and their strengths has yet to be evaluated. We conducted a meta-analysis of observational studies on risk and protective factors in heat wave-related deaths. METHODS: Using the OVID interface, we searched Medline (1966-2006) and CINHAL (1982-2006) databases. The Web sites of the World Health Organization, Institut National de Veille Sanitaire, and Centers for Disease Control and Prevention were also visited. The search terms included heat wave, heat stroke, heatstroke, sunstroke, and heat stress disorders. Eligible studies were case-control or cohort studies. Odds ratios (ORs) and information on study quality were abstracted by 2 investigators independently. Six case-control studies involving 1065 heat wave-related deaths were identified. RESULTS: Being confined to bed (OR, 6.44; 95% confidence interval [CI], 4.5-9.2), not leaving home daily (OR, 3.35; 95% CI, 1.6-6.9), and being unable to care for oneself (OR, 2.97; 95% CI, 1.8-4.8) were associated with the highest risk of death during heat waves. Preexisting psychiatric illness (OR, 3.61; 95% CI, 1.3-9.8) tripled the risk of death, followed by cardiovascular (OR, 2.48; 95% CI, 1.3-4.8) and pulmonary (OR, 1.61; 95% CI, 1.2-2.1) illness. Working home air-conditioning (OR, 0.23; 95% CI, 0.1-0.6), visiting cool environments (OR, 0.34; 95% CI, 0.2-0.5), and increasing social contact (OR, 0.40; 95% CI, 0.2-0.8) were strongly associated with better outcomes. Taking extra showers or baths (OR, 0.32; 95% CI, 0.1-1.1) and using fans (OR, 0.60; 95% CI, 0.4-1.1) were associated with a trend toward lower risk of death. CONCLUSION: The present study identified several prognostic factors that could help to detect those individuals who are at highest risk during heat waves and to provide a basis for potential risk-reducing interventions in the setting of heat waves.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States, United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : France

Health Impact:

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Elderly

Other Vulnerable Population: people with psychiatric illness; people with cardiovascular illness; people with pulmonary illness; people unable to care for themselves

Resource Type:

format or standard characteristic of resource

Review, Review

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content